UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,580	03/31/2001	Joshua T. Goodman	1018.119US1	6816

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EXAMINER
WOZNIAK, JAMES S

ART UNIT	PAPER NUMBER
2655	

DATE MAILED: 11/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

		Application No.	Applicant(s)
Office Action Summary		09/823,580	GOODMAN ET AL.
		Examiner	Art Unit	
		James S. Wozniak	2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 September 2005*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25 and 28-33* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25 and 28-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 March 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4)☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   In response to the office action from 5/11/2005, the applicant has submitted an amendment, filed 9/12/2005, amending claims 1, 3-8, 14, 16-20, 24-25, and 28, while canceling claims 26-27 and arguing to traverse the art rejection based on the amended limitations *(Amendment, pages 11-12)*. The applicant's arguments have been fully considered but are moot with respect to the new grounds of rejection, necessitated by the claim amendments and in view of Skiena et al *(U.S. Patent: 5,828,991)* and King et al *(U.S. Patent: 5,953,541)*.

2.   In light of the applicant's arguments directed towards the obvious-type double patenting rejection *(Amendment, page 11)*, the examiner has withdrawn the obvious-type double patenting rejection.

3.   The applicant has not officially challenged the official notice taken with respect to claims 21-22 respectively regarding the use of a small word penalty and a last letter insertion/deletion penalty, thereby making the use of such penalties the applicant's admitted prior art.

Claim Objections

4.   **Claim 13** is objected to under 37 CFR 1.75(c), as being of improper dependent form for

failing to further limit the subject matter of a previous claim. Applicant is required to cancel the

claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the

claim(s) in independent form.

5.   The infringement test for determining a proper dependent claim as per the MPEP 608.01

(n), Section III, states that a such a claim cannot conceivably be infringed by anything that would

not also infringe the claim it references. In this case, a computer memory medium would not

infringe the method steps of Claim 13, since the memory medium *itself* never actually performs

any of the active steps respectively required by Claim 13. In other words *possession* of such a

memory medium would infringe Claim 13, but not Claim 1.

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

7.   **Claims 1-4, 9, 11-20, 24-25, and 28-33** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Gilai et al *(U.S. Patent: 6,018,736)*, in view of Skiena et al *(U.S. Patent:*

5,828,991), and further in view of King et al *(U.S. Patent: 5,953,541)*.

With respect to **Claim 1**, Gilai discloses:

For an entered key input, finding one or more potential non-corresponding words from a dictionary of words based on a cost, where each potential non-corresponding word has a key input that does not match the key input of the entered word, and wherein the cost between the entered key input and the non-corresponding potential word is less than or equal to a maximum cost *(identifying different spelling versions of Catherine that would not have the same key input, Col. 7, Lines 7-35)*;

Presenting at least one of the one or more potential non-corresponding words as the intended word based on probability *(Col. 6, Lines 4-15; Col. 7, Lines 7-35; and Col. 8, Lines 1-33)*.

Gilai does not specifically suggest that probability for possible words related to a key input is based on a word context that utilizes a language model, however Skiena discloses:

Receiving key input corresponding to the entered word and at least one of a left context and a right context *(Col. 5, Lines 1-55, Fig. 3; and Fig. 12, Elements 30 and 32)*;

Determining a list of possible words utilizing a context based language model *(alternative word choices for a particular text entry, Col. 11, Lines 20-43; and word list vocabulary database, Col. 7, Lines 56-64)*; and

Using a language model to rank the listed words based on one or more of the at least one of the left context and the right context of the key input *(ranking alternative word choices for subsequent selection according to a probability, Col. 11, Lines 30-47)*.

Gilai and Skiena are analogous art because they are from a similar field of endeavor in text disambiguation. Thus, it would have been obvious to a person of ordinary skill in the art, at

the time of invention, to modify the teachings of Gilai with the used on a context based language

model for word disambiguation as taught by Skiena in order to provide a practical means for

word ambiguity resolution on a sentence level *(Skiena, Col. 2, Lines 31-38)*.

Gilai in view of Skiena does not specifically suggest the ability to train language data

based on words entered into a cache, however King teaches such a language data training method

(vocabulary module, Col. 16, Lines 44-56; and Col. 26, Lines 5-49).

Gilai, Skiena, and King are analogous art because they are from a similar field of

endeavor in text disambiguation. Thus, it would have been obvious to a person of ordinary skill

in the art, at the time of invention, to modify the teachings of Gilai in view of Skiena with the

ability to train language data based on words entered into a cache as taught by King in order to

allow a user to add custom vocabulary that is stored in a structure that reduces processing

complexity *(King, Col. 6, Lines 24-56)*.

With respect to **Claim 2**, Gilai recites:

The reduced keypad is a numeric keypad *(Col. 10, Lines 23-29)*.

With respect to **Claim 3**, Skiena discloses:

Determining a list of possible words corresponding to the key input for the entered word,

wherein each listed word is in a vocabulary or a cache *(alternative word choices for a particular*

text entry, Col. 11, Lines 20-43; and word list vocabulary database, Col. 7, Lines 56-64); and

Determining a probability for each listed word and ranking the listed words based on one

or more of the at least one of the left context and the right context of the key input *(ranking*

alternative word choices for subsequent selection according to a probability, Col. 11, Lines 30-

47).

With respect to **Claim 4**, Skiena teaches a word dictionary lookup process *(Col. 7, Line 56- Col. 8, Line 3)*.

With respect to **Claim 9**, Gilai discloses:

The dictionary is stored as a tree *(Col. 9, Lines 24-32)*.

With respect to **Claim 11**, Gilai recites:

The dictionary is a letter-based dictionary in which each word thereof is stored only by a constituent letter sequence corresponding to the word *(Col. 8, Lines 54-56)*.

With respect to **Claim 12**, Gilai discloses:

The dictionary is a key-based dictionary in which each word thereof is stored by at least the key sequence corresponding to the word *(Col. 10, Lines 23-29)*.

With respect to **Claim 13**, Skiena further discloses method implementation as a program on a computer readable memory *(Col. 4, Lines 48-55)*.

Claim 14 contains subject matter similar to claim 1, and thus, is rejected for the same reasons. Also, Skiena further discloses method implementation as a program on a computer readable memory, as applied to Claim 13.

Claim 15 contains subject matter similar to Claim 2, and thus, is rejected for the same reasons.

With respect to **Claim 16**, Gilai additionally discloses:

Sorting the array of word-probability pairs in decreasing order of probability *(Col. 7, Lines 22-31)*; and

Determining the word corresponding to the intended key input as a word of a first word-probability pair within the array of word-probability pairs *(Col. 8, Lines 1-9)*.

With respect to **Claim 17**, Gilai teaches the temporary list of word probability pairs as applied to Claim 16, while Skiena teaches the use of context information in word disambiguation as applied to Claim 14 and King teaches the use of a cache for language data training as applied to Claim 1.

With respect to **Claim 18**, Skiena teaches the use of context information in word disambiguation as applied to Claim 14, while Gilai additionally discloses:

For each word in the vocabulary that is consistent with the key input as an initial part of the word, determining a probability of the word, and, upon determining that the probability is greater than a greatest probability so far determined, setting the greatest probability to the probability and a greatest probability word associated with the greatest probability to the word *(Col. 7, Lines 46-56, and Col. 15, Line 54- Col. 16, Line 4)*;

Upon determining that the greatest probability is at least a number of times greater than a word of a first word-probability pair of the array of word probability-pairs, adding the greatest probability word associated with the greatest probability and the greatest probability a new first word-probability pair to the array *(Col. 15, Line 54- Col. 16, Line 4, and Col. 8, Lines 1-9)*.

With respect to **Claim 19**, Skiena teaches the use of context information in word disambiguation as applied to Claim 14, while Gilai teaches the method of Claim 18 and King teaches the use of a cache for language data training as applied to Claim 1. Also, Gilai teaches the use of a best candidates box *(Fig. 1, Element 94)*.

With respect to **Claim 20**, Gilai discloses:

Finding one or more additional potential words from the dictionary, where each additional potential word has a cost between the entered key input and a prefix of a key sequence corresponding to the potential word less than or equal to a maximum cost *(Col. 7, Lines 10-31)*;

Determining a probability of each potential additional word, and upon determining that the probability is greater than the greatest probability so far determined, setting the greatest probability to the probability of the potential additional word and the greatest probability word associated with the greatest probability to the potential additional word *(Col. 15, Line 54- Col. 16, Line 4, and Col. 8, Lines 1-9)*.

Claim 24, contains subject matter similar to Claims 1 and 14, and thus, is rejected for the same reasons.

Claim 25 contains subject matter similar to Claim 1, and thus, is rejected for the same reasons.

With respect to **Claim 28**, Skiena teaches a display for viewing sentence structure *(Col. 6, Lines 1-12)*.

With respect to **Claim 29**, Gilai additionally discloses:

The apparatus is a telephone *(Col. 6, Lines 58-60)*.

With respect to **Claim 30**, King further teaches a cellular phone for use with text disambiguation *(Col. 1, Lines 41-45)*.

With respect to **Claim 31**, Gilai additionally discloses:

The apparatus is a corded telephone *(Fig. 9, Element 715)*.

With respect to **Claim 32**, King teaches a handheld device for use with text disambiguation *(Fig. 4B)*.

Claim 33 contains subject matter similar to Claim 13, and thus, is rejected for the same

reasons.

8.   **Claims 5-8 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gilai

et al *(U.S. Patent: 6,018,736)*, in view of Skiena et al *(U.S. Patent: 5,828,991)*, in view of King

et al *(U.S. Patent: 5,953,541)*, and yet further in view of Westerman *(U.S. Patent: 6,677,932)*.

With respect to **Claim 5**, Gilai, Skiena, and King teaches the method for word

disambiguation as applied to Claim 1. Gilai, Skiena, and King do not teach determining a cost

between key sequences of input and dictionary words, however Westerman discloses a cost

based on key sequence distances *(Col. 3, Lines 37-57; and Col. 5, Line 35- Col. 6, Line 31)*.

Gilai, Skiena, King, and Westerman are analogous art because they are from a similar

field of endeavor in text disambiguation. Thus, it would have been obvious to a person of

ordinary skill in the art, at the time of invention, to modify the teachings of Gilai in view of

Skiena and further in view of King with the cost based on key sequence distances as taught by

Westerman in order to add a means for spelling-independent ambiguity resolution to further

improve recognition accuracy *(Westerman, Col. 3, Lines 28-37)*.

With respect to **Claim 6**, Gilai recites:

Recursively determining the cost until one of a first condition and a second condition is

met, where the first condition is the cost is so far greater than the maximum cost, and the second

condition is the cost has been completely determined as less than or equal to the maximum cost

(Col. 11, Line 60- Col. 12, Line 60, and Fig. 2, Element 150).

With respect to **Claim 7**, Gilai further discloses:

Determining the cost between the entered key input sequence and the key sequence corresponding to the word comprises employing a dynamic programming approach *(Col. 7, Lines 46-65)*.

With respect to **Claims 8 and 23**, Westerman discloses a cost based on key sequence distances, as applied to Claim 5.

9.   **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Gilai et al *(U.S. Patent: 6,018,736)*, in view of Skiena et al *(U.S. Patent: 5,828,991)*, in view of King et al *(U.S. Patent: 5,953,541)*, and yet further in view of Schabes et al *(U.S. Patent: 5,610,812)*.

With respect to **Claim 10**, Gilai teaches the method for finding and presenting most likely dictionary words corresponding to a key input, as applied to Claim 1. Gilai does not specifically suggest that the dictionary is stored as a DAG model, however Schabes teaches such a configuration *(Col. 9, Lines 43-47)*.

Gilai, Skiena, King, and Schabes are analogous art because they are from a similar field of endeavor in text lookup utilizing a dictionary. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Gilai in view of Skiena, and further in view of King with the dictionary embodiment as a DAG model as taught by Schabes in order to implement an efficient dictionary lookup method regardless of dictionary size *(Schabes, Col. 9, Lines 43-47)*.

10.   **Claims 21-22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gilai et al

(U.S. Patent: 6,018,736), in view of Skiena et al *(U.S. Patent: 5,828,991)*, in view of King et al

(U.S. Patent: 5,953,541), and yet further in view of the applicant's admitted prior art.

With respect to **Claim 21**, Gilai in view of Skiena and further in view of King teaches the

apparatus for processing a numeric text input that is capable of determining potential words from

a dictionary that match the input utilizing context information, wherein each word has an

associated cost, as applied to Claim 14. Gilai in view of Skiena and further in view of King does

not specifically suggest utilizing a small word penalty, however, it is the applicant's admitted

prior art that it would have been obvious to one of ordinary skill in the art, at the time of

invention, to associate a small word penalty with probability since small words have less letters

and more letter combination possibilities, and thus would require more accurate spelling

correction. Thus, in order to ensure small word correction accuracy, it would have been obvious

to one of ordinary skill in the art, at the time of invention, to modify the teachings of Gilai in

view of Skiena and further in view of King with a small word penalty with a word probability

calculation.

With respect to **Claim 22**, Gilai in view of Skiena and further in view of King teaches

the apparatus for processing a numeric text input that is capable of determining potential words

from a dictionary that match the input utilizing context information, wherein each word has an

associated cost, as applied to Claim 14. Gilai in view of Skiena and further in view of King does

not specifically suggest a last letter insertion/deletion penalty, however, it is the applicant's

admitted prior art that it would have been obvious, to one of ordinary skill in the art at the time

of invention, to associate an insertion/deletion with probability since added characters to a

recognized dictionary word would likely be in error, and thus, assessed a great probability for error in final word determination. Thus, in order to ensure accurate word correction in the case of an additional and errant key entry, it would have been obvious to one of ordinary skill in the art, at the time of invention, to modify the teachings of Gilai in view of Skiena and further in view of King with a last letter insertion/deletion penalty.

Conclusion

11.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Grover et al *(U.S. Patent: 5,818,437)*- teaches the use of a keystroke error dictionary for spelling correction and word disambiguation.

Goodman et al *(U.S. Patent: 6,654,733)*- teaches a method for adjusting word probabilities based on user text input.
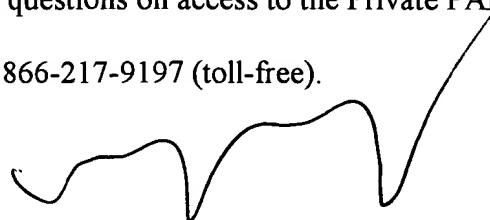
Savolainen (U.S. Patent Publication: 2002/0126097)- teaches a method for text disambiguation utilizing a numeric keypad capable of identifying keystroke mistakes.

13.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632. The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on (571) 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James S. Wozniak
10/17/2005

W. R. YOUNG
PRIMARY EXAMINER